62910 Peerless Ct. • Bend, OR 97701 Phone 541.385.0706 Fax 541.382.9406

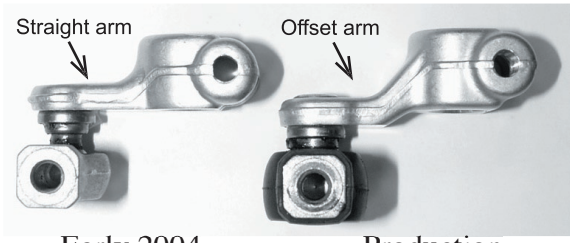
MUZZYS HIGH PRESSURE AIR SHIFTER KIT with Digi-Kill®
Kawasaki ZX-10R

CAUTION **READ THIS FIRST :**

- NEVER OPERATE THE AIR SHIFTER WITHOUT THE MOTORCYCLE RUNNING UNDER POWER. TO DO SO WITH THE ENGINE NOT RUNNING WILL BEND SHIFT FORKS.

NOTE: Before installing this kit on your 2004 ZX-10R you must verify that your motorcycle has the proper shift arm (See photo at right). If your ZX-10 has the early 2004 part you must order this item from Muzzys or your Kawasaki dealer - P/N 13242-0016.

- ALWAYS TURN OFF THE AIR BOTTLE WHEN NOT USING THE AIR SHIFT MODE.
- FILL BOTTLE NO MORE THAN 7 oz. OF CO2, APPROX 900 PSI. THIS IS GOOD FOR APPROXIMATELY 300-400 SHIFTS.



Early 2004 Shift Arm

Production Shift Arm
Your ZX-10 MUST have this part or your kit will not work!

It is highly recommended that you have a factory service manual on hand for reference.

A thread sealer tape or paste is recommended on all pipe thread fittings.

NOTE:
- The appearance of individual components may vary from those in the photos. However the function and location does not.
- We will start at the rear of the bike and work forward.

Component Removal

1. Following the stock service manual procedures, remove the following components:
   - Seats
   - Lower fairing - **NOTE: This fairing will need to be notched - (Fig. 1). A high speed rotary tool with a sanding drum is recommended for this procedure. Check with your local dealer for assistance if needed.**
   - Left side panel
   - Left rear foot peg
   - Left side lower fairing
   - Small front fairing panel below headlight
   - Raise the fuel tank - removal is NOT necessary

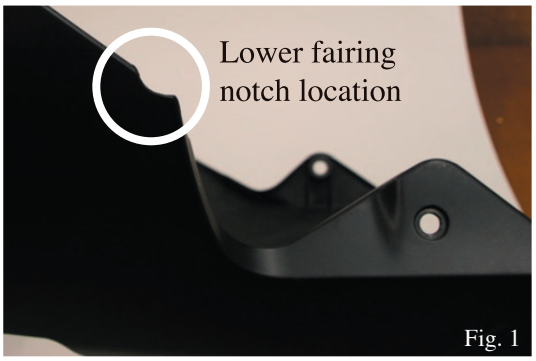


Fig. 1

Fig. 1a

Hardware Assembly

2. Assemble the bottle bracket to the bracket frame mount (tensioner knob toward the top) using the two counter sunk allen bolts (Fig. 1a).

3. Using the two 8 x 1.25 x 20mm allens bolts, mount the entire bottle mount assembly to the **outside** of the left rear passenger footpeg mounting holes.

4. Screw the bottle valve into the bottle, ***DO NOT*** put the bottle in a vise. Hold the bottle by hand and tighten the valve assembly as snugly as possible with a wrench on the flats. (You may also hold the bottle by clamping a loop of nylon webbing in a vise, put the bottle through the loop and twisting the bottle until it is gripped tightly.) Using pipe thread sealer

Fig. 2

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or Teflon tape, screw the 1/8 npt male to -4 AN female adapter into the bottle valve so that it points toward the bottom of the bottle.

5. Remove the two stock bolts on the dyno cover (Fig. 2). Bolt the shift ram mount to the dyno cover using the two 6 x 30mm allen bolts and the two 6mm washers. **NOTE: The washer must be installed *UNDER* the ram mount for proper spacing.** Tighten these bolts now.

6. Install the shift ram cylinder to the mounting bracket by inserting the 30mm button head allen through the mount bracket and into the shift ram. **NOTE: The stepped spacer must be installed into the ram with the shoulder of the spacer on the INSIDE of the ram.** Apply the washer and nut then tighten. (Fig. 3)

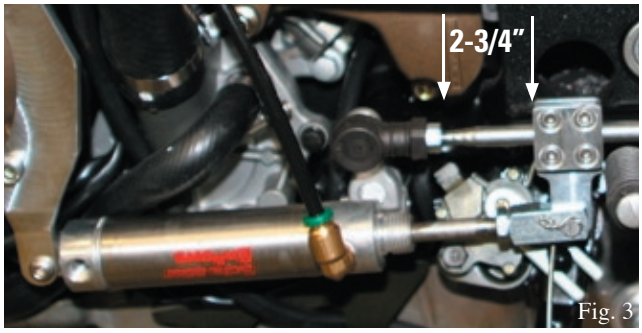

Fig. 3

7. Next install the locknut and shift rod clevis onto the threaded end of the shift rod. Then insert the shift arm into the clevis and connect by inserting the pin through the back side of the clevis. Install the cotter pin to complete the connection. (Fig. 3)

8. Install the shift arm assembly onto the stock shift rod using the four 4mm allen bolts facing outside. Leave this assembly loose on the shift rod for now.

9. Adjust the shift arm on the stock shift rod by using a small scale to measure from the stock shift arem (mounted to engine) to the shift arm on the shift rod. This measurement should be about 2-3/4". (Fig. 3). Tighten the four shift arm bolts now. Check the component alignment and make sure the shift ram isn't binding.

10. Remove and discard both plastic plugs from the shift ram and screw a 90 deg. Prestolok fitting into the shift cylinder rod end. This fitting must be pointing up. Use care when threading the fitting into the ram cylinder. It is easy to cross thread and only goes in 2-3 turns.

Fig. 4

11. Install one straight 1/8" pipe -4 fitting into the top of the regulator. Then install the straight to 1/8" pipe push lock fitting into the side of the regulator. (Fig. 4) Set aside for now.

12. Holding the air solenoid in hand with the IN/EXH ports facing up and the black side of the solenoid to your left, install a 90˚ pushlock fitting into the IN port of the solenoid. Again be sure to use thread sealer on all threads and tighten until the fitting points toward you. Turn the solenoid over and install the other 90˚ pushlock fitting in the OUT port. Tighten until the fitting points toward the black end of the solenoid.

13. Install the straight end of the -4 braided line onto the bottle and route the line uner the left hand side cover and up to the regulator positioning the regulator behind the air cleaner cover and fuel pump (Figs. 1a & 5). Tighten both hose ends.

14. Cut and install a short piece of poly line between the regulator and the solenoid "IN" port. Route the remaining poly line between the solenoid "OUT" and the shift ram. The solenoid can be mounted with the provided Velcro tape, to the inside of the frame. (Fig. 5)

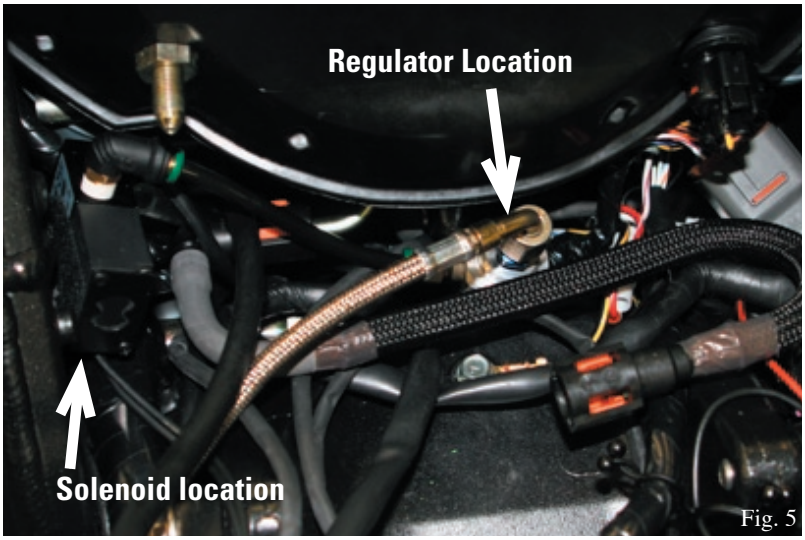

Fig. 5

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Wiring Assembly

15. Cut the tie-wrap that holds the 11 pin connector for the left handlebar switch. You'll find this connector at the front of the motorcycle behind the small panel that you've already removed (Fig. 6). Pull the connector down and locate the brown wire from the handlebar side of the plug. This wire is the power lead. Clip the red splice connector onto this wire. Plug the blue wire from the Muzzy harness into this splice connector.

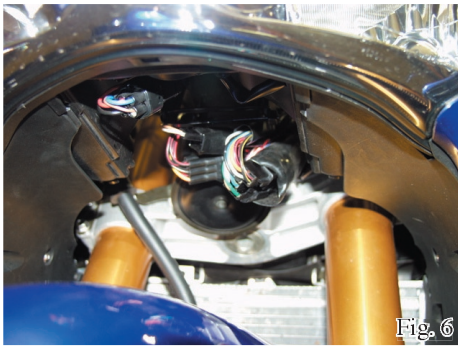
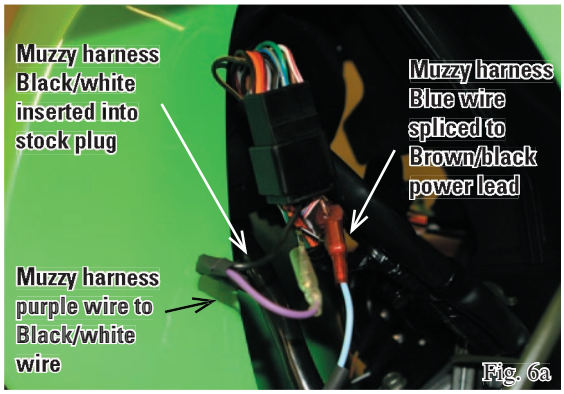


Fig. 6

16. Next locate the black/white tracer wire and carefully remove it from the bike side of the harness. ***NOTE:*** **Be careful with this step. Muzzys recommends the use of a small flat bladed screwdriver .050" wide.** To perform this step, insert the screwdriver into the stock connector then gently lift up on the tab and pull out the wire. Slide the short plug insulator (provided) over the connector and plug this wire into the purple wire on the Muzzy harness. Then insert the black/white tracer wire from the Muzzy harness into the stock plug where you just removed the wire from (Fig. 6a).


Muzzy harness Black/white inserted into stock plug
Muzzy harness Blue wire spliced to Brown/black power lead
Muzzy harness purple wire to Black/white wire
Fig. 6a

17. Route the Muzzy harness toward the rear of the motorcycle.

18. Install the small switch mount bracket onto the clutch perch and insert the switch into the bracket (this bracket is keyed so the switch will only mount one way). Plug the 6 pin switch connector into the matching connector on the Muzzy harness.

Power and Ground connections:

19. Locate one of the two 4 pin diagnostic connectors, one is near the junction/relay box and the other is between the turn signal relay and the fuse box. They are secured to the main harness with tape. Remove the unused connector half from the end. Insert the Muzzy harness wires and terminals into the connector so that the following combinations are made: (Fig. 7)
    - Muzzy harness Red to the stock harness Brown/white
    - Muzzy harness Black to the stock harness Black/yellow

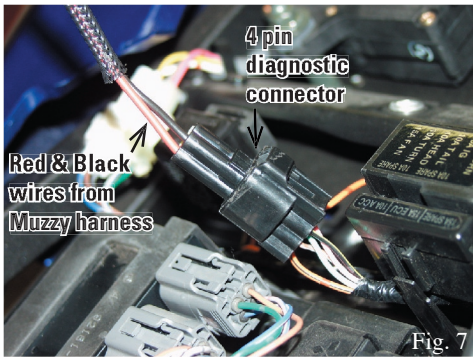


Fig. 7

Digi-Kill Installation

20. **Shift signal/Air solenoid connections:**
    a. Plug the 4 pin connector from the Digi-kill into the matching 4 pin connector on the Muzzy harness.

    b. Now plug the remaining grey and white wires from the Digi-kill into the matching wires on the air solenoid. These wires have male/female bullet connectors to facilitate matching.

21. **Digi-Kill fuel injection connections (Ref. Diagrams A & B):**
    a. On the ZX10 the fuel injector power is supplied via the White/red wire in the brown 16 pin engine harness connector on the right side of the throttle bodies. You must interrupt this circuit and it's best to install the Digi-kill fuel injection wires at this connector.

(Note: The following paragraph is for wiring the Digi-Kill without a PowerCommander module. See paragraph 23 for instructions on wiring the Digi-Kill with a Power Commander)

22. **Digi-Kill Only wiring**
    a. Begin by disconnecting the main harness connector. You will only need access to the incoming side of the connector (closest to the top of the motorcycle). Remove the white retaining clip from the connector.

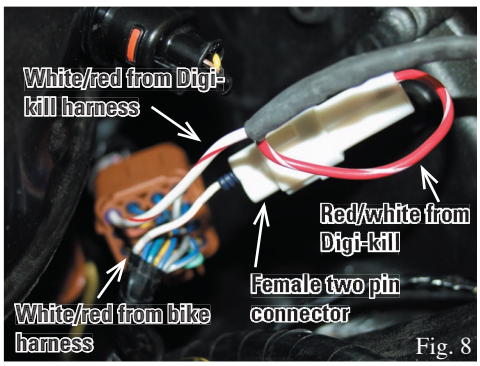


Fig. 8

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b. Next, carefully remove the White/red tracer wire from the connector and insert it into the female side of the two pin plug (Fig. 8).

c. Now insert the White/red tracer wire from the Digi-kill into the plug where you just removed the wire from. **NOTE:** This wire will only fit one way into the plug. You may compare the orientation of the other wires in the plug to ensure proper insertion.

d. Now plug the white 2 pin Digi-Kill connectors together. (Fig. 8 & A)

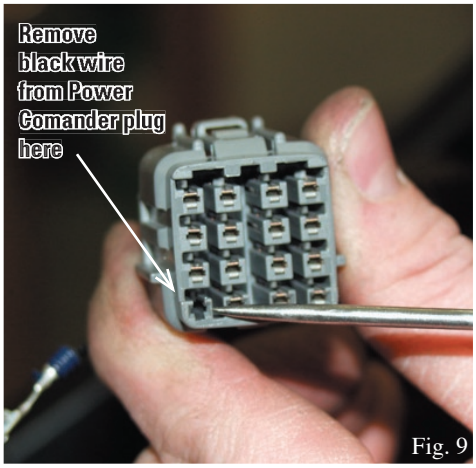

Fig. 9

(Digi-Kill - with Power Commander)

23. To wire the Digi-Kill for use with a Power Commander, remove the black wire from the Power Commander plug and insert it into the female side of the two pin plug. (See Figs. 9 & 10 for wire location)

a. Insert the White/red tracer wire from the Digi-Kill into the Power Commander plug where you just removed the black wire from.

b. Connect the two pin connectors on the Digi-kill harness together. This will connect the Red/white wire to the black wire from the Power commander harness (Fig. 10). NOTE: When connecting the Power Commander (grey female plug) to the motorcycle verify that the White/red tracer wire from the Digi-Kill connects to the White/red tracer on the brown main harness plug (male) See Fig. B.

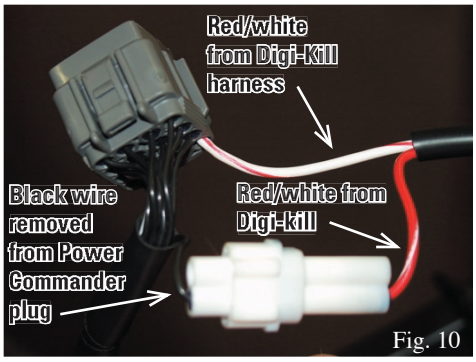

Fig. 10

Operational notes:

- Turn the bottle off when not intending shifter use. As previously noted DO NOT AIR-SHIFT THE MOTORCYCLE WHEN IT IS NOT IN MOTION.
- Carbon Dioxide (CO2) is the recommended gas for the unit, however nitrogen or nitrous oxide can be used as an alternative. Bottle fills are available at welding supply or some race shops.
- Periodically check the air cylinder and linkage for tightness.

Operation of the Digi-kill: General Description

The Digi-kill unit operates in the following manner when properly connected:

Ignition is switched on – Digi-kill powers up, self tests and flashes the LEDs indicating that the system is on and operating normally. The fuel injection control circuit enables the fuel injectors to have power and the bike can be started and run as normal.

Ground signal is received on green wire – Digi-kill opens the air shift solenoid and waits according to the "Delay" setting while the air cylinder is pressurized and the gearshift begins to move. During the "delay" time the yellow LED will be illuminated.

At the end of the "Delay" time the fuel injection power is interrupted according to the "Kill" time, cutting the engine power and allowing the actual gearchange to occur. During the "kill" time the red LED will be illuminated.

At the end of the "Kill" cycle the power is restored to the fuel injectors and the shift solenoid is closed. The system then resets and waits for the next shift signal.

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Operation of Digi-kill: Setup

The Digi-kill unit is preset to values we have found to work well in a typical electronic-over-air installation. We suggest you try these settings first and then adjust if necessary. Most shift problems will involve the delay timing so try adjusting that before the kill time. Use the following guide to optimize your shift setup.

Note: If you need to adjust the Digi-kill the rotary switches have detents ("clicks") and you must set the switches only to one of the eight positions. The Digi-kill may not function properly if you set the switches between clicks. However, you may rotate the switches past 360 degrees or even directly between "min" and "max" with no risk of damage.

Operation of Digi-kill: Tuning basics

If you don't experience a quick and smooth shift keep these basics in mind as you test different values.

The preset value of the "kill" time is going to be good for most applications regardless of shift kit type. Therefore, when tuning focus on "delay" times first.

Most shift problems are caused by a time difference – electronics react nearly instantly while pneumatics are much slower. This is the reason the Digi-kill allows you to adjust the electronic reaction time to match your pneumatic setup.

If your power cut comes too soon ("delay" is too short) the bike will generally leave the lower gear ok but have trouble going into the higher (next) gear.

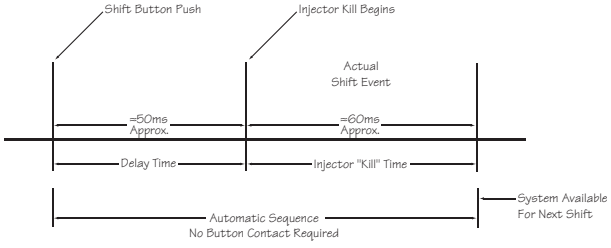
If your power cut comes too late you will needlessly stress the gearshift assembly and shift forks as the air cylinder will be pushing on the gearshift while waiting for the power interruption.

The smoothest shifts are achieved with the shortest "kill" time. However, the setup of your shift system, condition of the gearbox, gearshift, forks, etc. will be the final determining factor of how short the "kill" time can be.

Finally, be sure that the mechanical aspects of your system are in good working order:
Rod ends clean, free to move and not too loose or worn out.
Shift rod and pedal not rubbing, bent or bound up.
All bolts, mounts, etc. tight and secure.
Air cylinder clean, lubricated and sliding freely.
Air cylinder exhaust port not blocked.
Air lines properly connected, not broken, pinched or leaking.
Solenoid functions promptly, is not blocked or frozen.
Air supply is charged and set to a suitable pressure.
Shift forks are not worn out or bent.
Transmission gears are serviceable – dogs are not rounded off and fork grooves not excessively loose.
(Sorry, but the Digi-kill does not recondition your gearbox.)

Thanks and Enjoy your new Muzzys shift kit!

Muzzys Digi-Kill Tuning Guide	
Symptom	***Suggested Adjustment***
Harsh, labored shift	Lengthen delay time and extend kill time, then reduce kill time to suit
Noticeable delay before shift occurs or shift does not begin cleanly	Shorten delay time
Shift not completed, "crunches" or kicks out	Lengthen kill time
Excessive deceleration	Shorten kill time



Muzzys Digi-Kill Timeline

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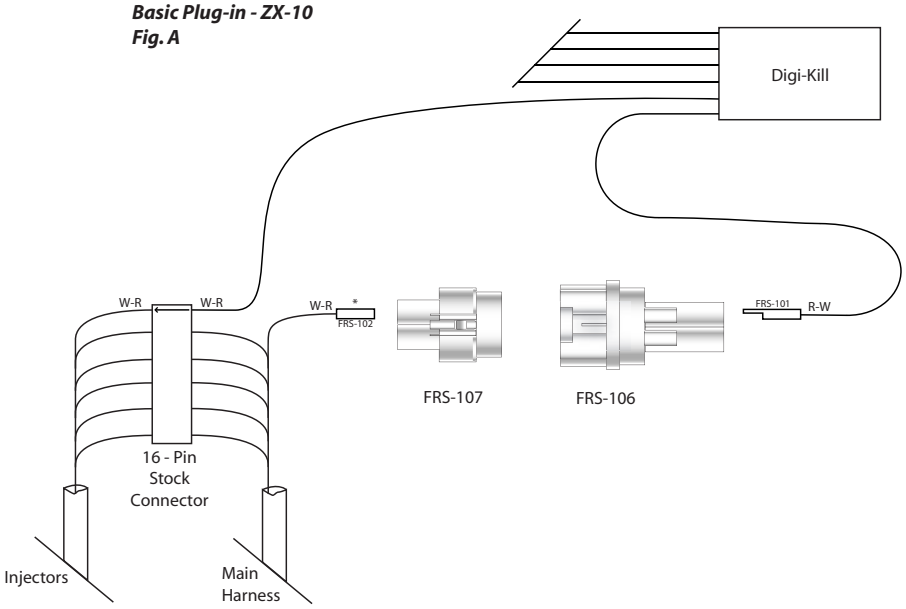
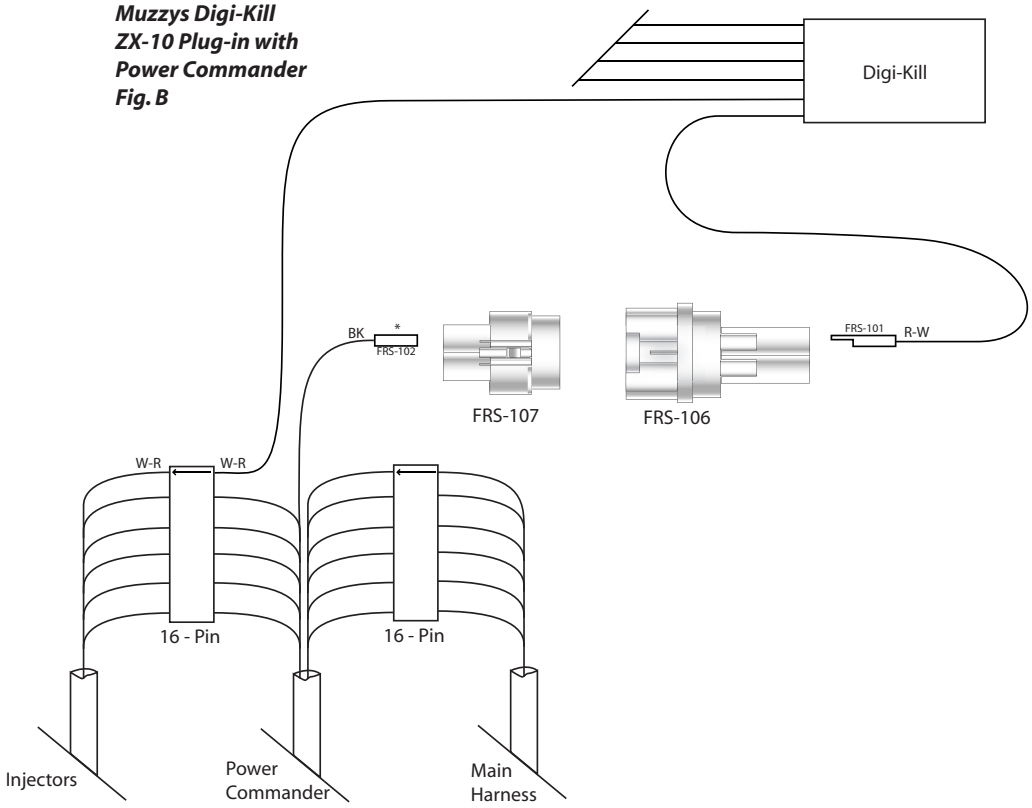
Muzzys Digi-Kill
Basic Plug-in - ZX-10
Fig. A



* - OEM terminals - removed from 16 pin connector, install in FRS 106/107

Muzzys Digi-Kill
ZX-10 Plug-in with
Power Commander
Fig. B



* - OEM terminal - removed from 16 pin Power Commander connector, install in FRS 106/107

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Packing List

Muzzys High Pressure Air Shifter Kit For Kawasaki ZX-10R with stock rearset P/N 0001-00053

Part Number	Description	Qty
0001-00059	Shifter Cylinder Bracket	1
0001-00057	Shift Shaft Bracket (A)	1
0001-00055	Shift Shaft Bracket (B)	1
0055-00058	Bottle Mount Bracket	1
0001-00062	Bottle Bracket	1
S128-K12	Relay Bracket	1
S127-K12	Switch Bracket (GSXR & ZX12R)	1
0001-00038	Wire Harness	
	Main	1
	Digi-Kill	1
	Switch	1
	Insulator	1
	2 pin female connector	1
S9001	Pressure Bottle**	1
S16146-SNOS	High Pressure Valve (5/8")	1
0001-00040	Regulator	1
MSSR-092-DP	Shift Ram	1
MSHD-166-1	Clevis	1
S310-12VDC	High Pressure Solenoid	1
0055-00017	1/8 Male Npt to -4 90˚ Elbow -S	1
0036-00158	1/8 Npt -4 Str. AN Straight	1
SH4CP	Clevis Pin	1
SH5C	Cotter Key	1
0036-00245	Counter Sunk SHCS 1/4-20 x 5/8	2
0036-00246	Button Head Cap Screw 6x30	1
01-0309	Allen Bolt 8x20	2
SH630	Allen Bolt 6x30	2
SH412	Allen Bolt 4x12x.7	4
0036-00081	Flat Washers AN-4 (1/4")	2
01-0346	Flat Washers 6mm	3
SH6LN	Lock Nut 6mm (Nylock)	1
0036-00247	Prestolok 1/8 to 1/4 Straight	1
SHW169PLNS-4-2	Prestolok 1/8 to 1/4 90 degree	3
0036-00138	Velcro 2"	2
SPFT-4A-BLK-100	Plastic Air Line (1/4")	36"
S126	Steel pivot bushing	1
2000-042	Stickers	2
	Instruction Sheet	1
	Packing List (DOT reference)	1

**** STATEMENT OF COMPLIANCE**

Manufacturer hereby certifies that the material and parts furnished herein have been fabricated using the material specifications and/or processes required by USDOT / HAZMAT regulations (Q.C. Inspector D.H. Findley). Proper records pertaining these regulations are available and on file for confirmation.